

What is claimed is:

1. A power supply circuit comprising:

a transistor of which emitter and collector are connected to a power input terminal and a power output terminal, respectively;

5 a voltage detection circuit configured to detect an output voltage at the power output terminal;

a voltage control circuit connected to a base of the transistor and configured to control a base current of the transistor on the basis of both of the output voltage detected by the voltage detection circuit and a given target voltage;

10 a resistor circuit placed to connect the base and the collector of the transistor;

a current bypass circuit placed to connect the emitter and the base of the transistor and configured to bypass the transistor so that a bypass current flows through the current bypass circuit; and

15 a current accepting circuit connected to the power output terminal and configured to accept a given amount of current from an output current passing the power output terminal by performing either absorption or discharge of the given amount of current,

20 wherein the amount of current to be accepted is equal to or larger than an amount of the bypass current and a product of the amount of the bypass current and a resistance value of the resistance circuit is equal to or more than a difference between a voltage at the power input terminal and the target voltage.

25 2. The power supply circuit according to claim 1, wherein the current acceptance circuit is configured to absorb or discharge the acceptance current only when the current bypass circuit allows the bypass current to flow therethrough.

30 3. The power supply circuit according to claim 1, wherein the current bypass circuit is composed of a constant-current circuit.

4. The power supply circuit according to claim 1, further comprising, other than a main supply circuit equipped with the transistor, the voltage detection circuit, the voltage control circuit, the resistor circuit, the current bypass circuit, and the current acceptance circuit, whereby the main supply circuit controls the voltage at the power output terminal, an auxiliary supply circuit configured to control the voltage at the power output terminal, independently of the voltage control performed by the main supply circuit.

5. The power supply circuit according to claim 1, wherein the current acceptance circuit is composed of a constant-current circuit.

6. The power supply circuit according to claim 5, wherein the current acceptance circuit is configured to absorb or discharge the acceptance current only when the current bypass circuit allows the bypass current to flow therethrough.

7. The power supply circuit according to claim 5, wherein the current bypass circuit is composed of a constant-current circuit.

8. The power supply circuit according to claim 5, further comprising, other than a main supply circuit equipped with the transistor, the voltage detection circuit, the voltage control circuit, the resistor circuit, the current bypass circuit, and the current acceptance circuit, whereby the main supply circuit controls the voltage at the power output terminal, an auxiliary supply circuit configured to control the voltage at the power output terminal, independently of the voltage control performed by the main supply circuit.

9. The power supply circuit according to claim 1, wherein the current acceptance circuit is composed of a resistor.

10. The power supply circuit according to claim 9, wherein the current acceptance circuit is configured to absorb or discharge the acceptance current only when the current bypass circuit allows the
5 bypass current to flow therethrough.

11. The power supply circuit according to claim 9, wherein the current bypass circuit is composed of a constant-current circuit.

10 12. The power supply circuit according to claim 9, further comprising, other than a main supply circuit equipped with the transistor, the voltage detection circuit, the voltage control circuit, the resistor circuit, the current bypass circuit, and the current acceptance circuit, whereby the main supply circuit controls the voltage at the power
15 output terminal, an auxiliary supply circuit configured to control the voltage at the power output terminal, independently of the voltage control performed by the main supply circuit.